RS-360 Wireless Plumbing Leak Production and Valve Closure System

User Manual & Troubleshooting Guide
(Rev A.)

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RS-360 System Operation and Overview

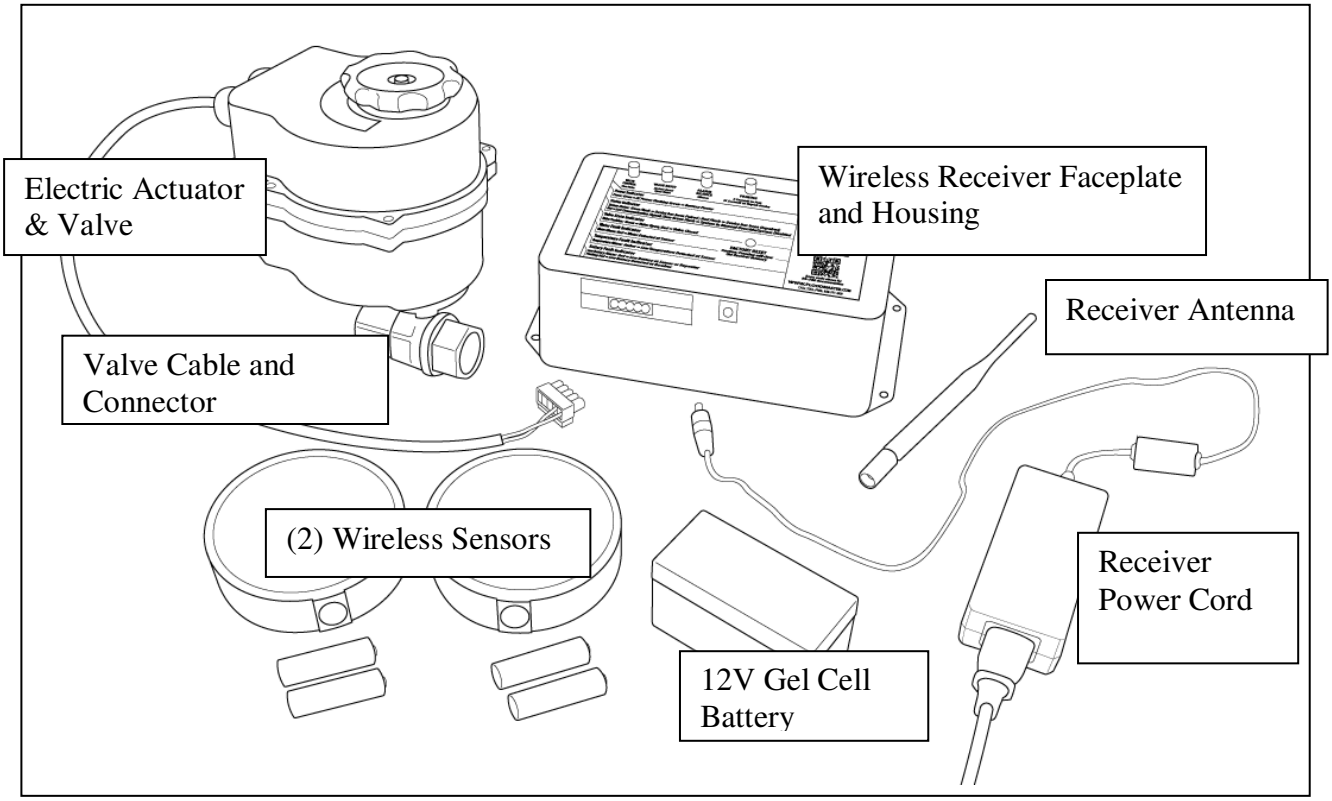
Introduction

Thank you for trusting your leak detection requirements to Reliance Detection Technologies. We are confident you will find our system easy to use and reliable. We take great pride in providing you with a quality product and are always available to assist you with installation or operation questions. We can be reached M-F 8:30 am to 5:00 pm EST at 888-771-4929; via email info@reliancedetection.com; or via facsimile 203-481-5036. Additional product information and Frequently Asked Questions can also be found at www.reliancedetection.com.

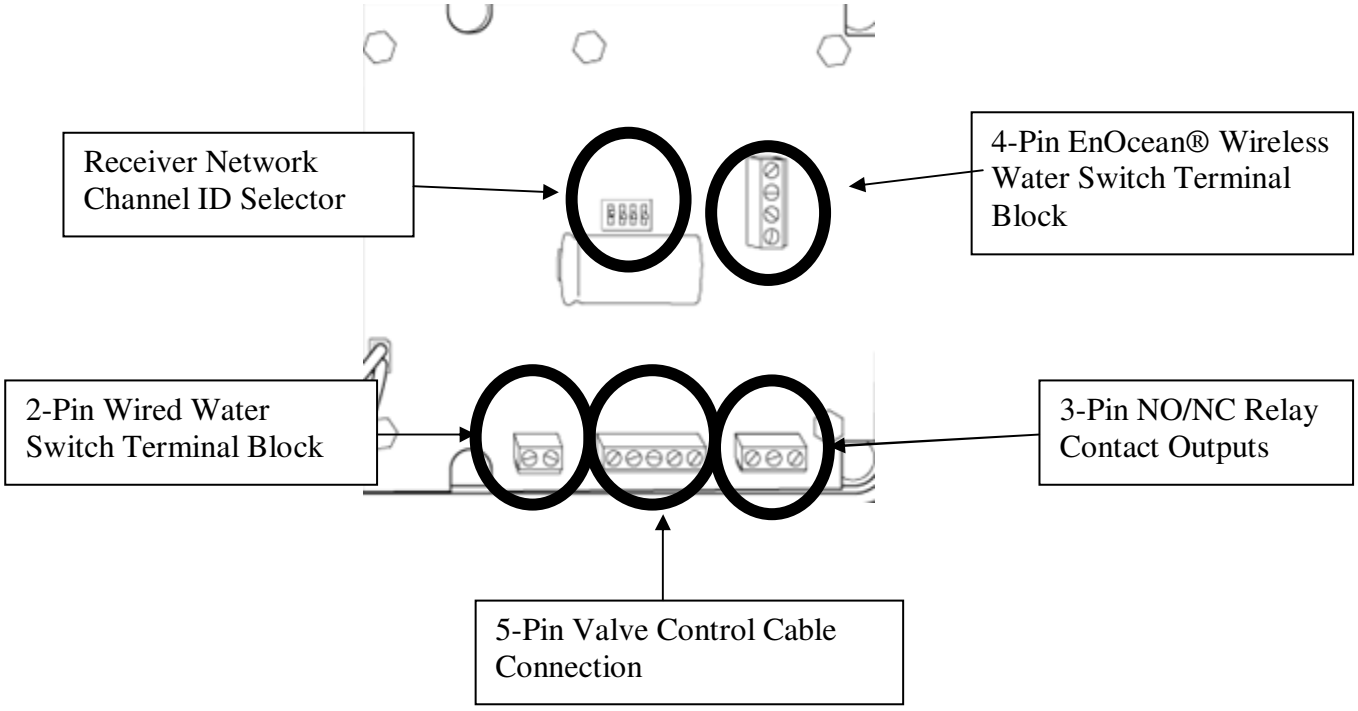
General Overview of the System

The Model RS-360 Wireless Plumbing Leak Protection System is designed to automatically shut down the water feed line when a sensor comes in contact with a conductive liquid (such as water). The system will also respond when the ambient temperature at any sensor drops to 45ºF (+/- 5°) (º 7 C). Audible alarm, on-board battery back-up and output signal connections are also standard on all systems. RS-360 kits include the following:

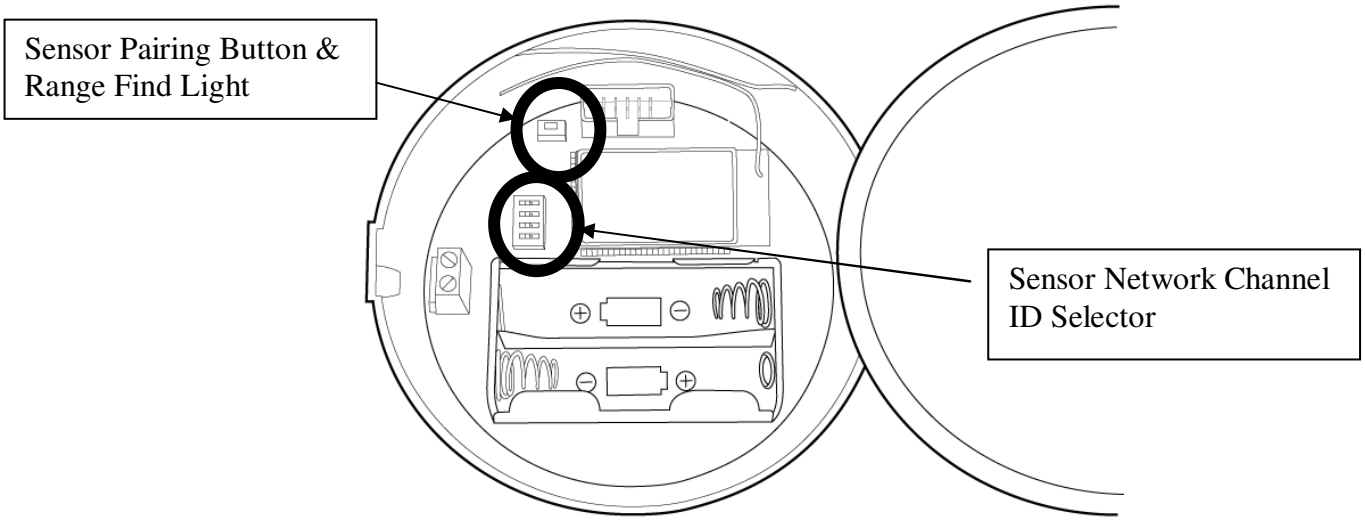
System Components



Wireless Receiver PC Board Call Outs


Receiver Network Channel ID Selector
4-Pin EnOcean® Wireless Water Switch Terminal Block
2-Pin Wired Water Switch Terminal Block
3-Pin NO/NC Relay Contact Outputs
5-Pin Valve Control Cable Connection

Wireless Sensor PC Board Call Outs



System Features

Wireless Technology

The RS-360 Wireless Plumbing Leak Protection System components operate on FCC approved 903Mhz band wireless signal between the Receiver, Sensor(s) and optional Repeater. The system is considered a closed one, in that wireless devices are assigned unique ID addresses as they pair or join the network. This will prevent interference and false triggers from other wireless devices.

This system and its wireless accessories (sensors and repeaters) include the following:

Contains Transmitter Module FCC ID: TFB-SIFLEX2
Contains Transmitter Module IC: 5969A-SIFLEX2

FCC & Industry Canada Compliance Statement:

To comply with FCC and Industry Canada RF radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any antenna or transmitter.

General System Operation

Receiver

The Receiver is the control panel and main user interface of the system. It controls the joining and removal (pairing and un-pairing) of Sensors and other similar devices into and out of the network. It also powers and controls electric actuator operation to close and open the valve in the event of a system fault. The Receiver is powered by 16VDC power via a desktop power supply with on board Battery Back-up via a 12V Gel Cell Battery. The User Interface Panel on the Receiver provides easy access to system function buttons, status indicator lights and audible alarm control. It also provides terminal block style electrical connectivity for accessory inputs and outputs (such as wall switch override inputs, output signal contacts, etc).

Receiver –

User Interface Panel - Buttons

Valve Control

Press and release to manually close the valve

Valve Reset

Press and release to clear system faults and to open the valve

Alarm Silence

Press and release to Silence audible alarm (does not open the valve or clear faults)

Pairing (works in conjunction with desired Sensor or Repeater)

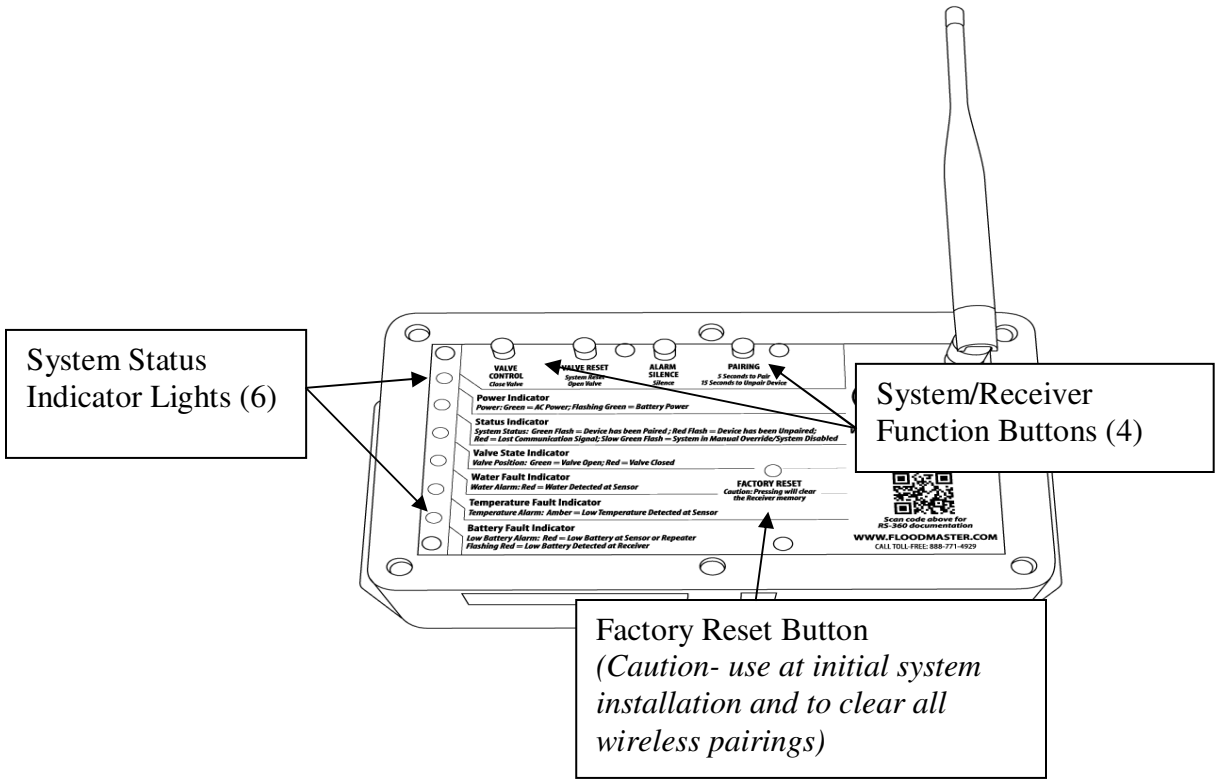
Press and hold for 5 seconds to enter Pairing mode (to join Sensor or Repeater to the network)

Press and hold for 15 seconds to enter Un-Pairing mode to remove a Sensor (or Repeater from the network).

Factory Reset

To be used only during initial installation and start-up.

Caution: Use at initial system installation and to clear all wireless pairings



Wireless Sensors

Standard RS-360 kit includes (2) Wireless Sensors. Up to 78 additional sensors can be added to the basic kit (total not to exceed 80). Sensors monitor and signal fault conditions to the Receiver for Water, Low Temperature, Low Battery and Lost Communication with Receiver. Whenever there is a fault (water, low temperature, low battery or communication) the sensor will begin flashing an onboard light to signal the fault seen at the Receiver. The Receiver will likewise sound an audible alarm, the appropriate Fault Light Indicator will turn on and the valve will close.

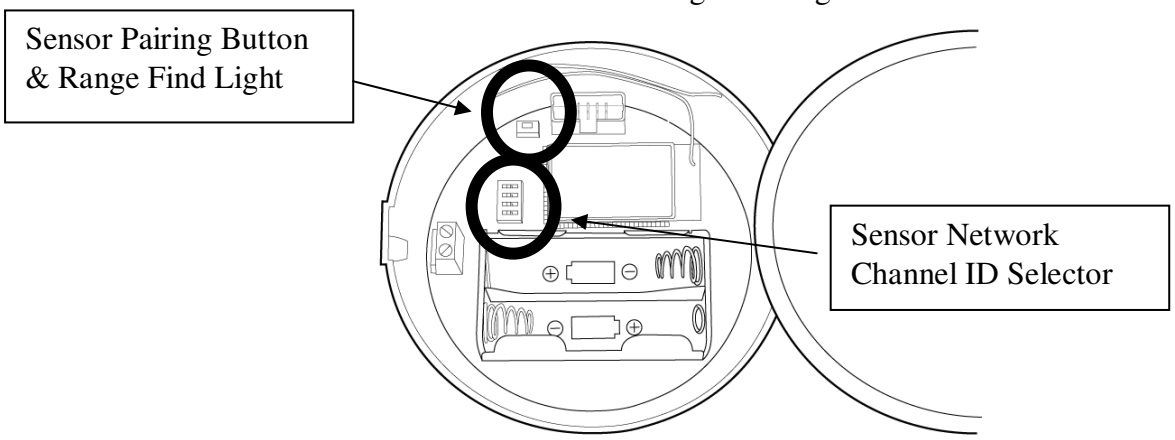
Wireless Sensor - User Interface Button

Sensor Interface Button

New Sensor - Press and Hold for 5 Seconds join new sensors to the wireless network (via the Receiver)

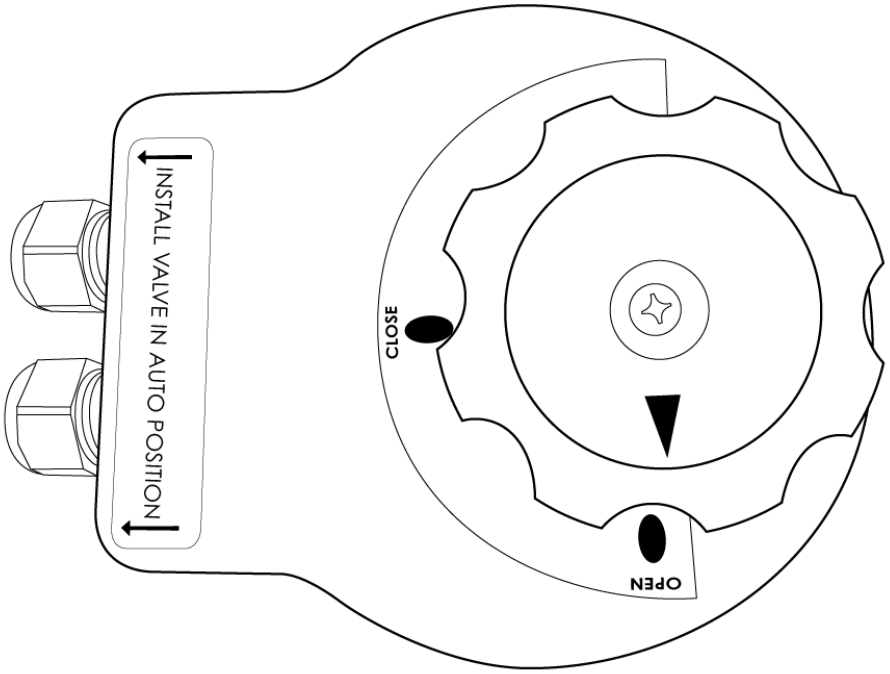
Existing Sensor – Press and Hold for 15 seconds to remove sensors from the wireless network (via the Receiver)

Range Find Mode – Press and Release after pairing to display visual indication of Sensor wireless signal strength.



Valve & Actuator

Kits also include an electric actuator and full-port, bi-direction lead free valve, which meets ANSI 61 Annex G Safe Drinking Water Standards. Actuator and valve are powered by the Receiver. All valves include a manual override knob to open and close the Valve as desired.



Normal System Functions and Features

Normal Monitoring State

Normal Monitoring State	Device	Light	Other
	Sensor	--	--
	Receiver	Power Indicator – Green Valve State Indicator - Green	Audible Alarm Off
	Valve		Open

System Fault Indicators:

System Fault	Device	Light	Other
Water at Sensor	Sensor	Red Flashing	
	Receiver	Water Fault Indicator- Red	Audible Alarm On
	Valve		Closed
Low Temperature at Sensor	Sensor	Amber Flashing	
	Receiver	Temperature Fault Indicator - Amber	Audible Alarm On
	Valve		Closed
Low Battery at Sensor	Sensor	Red Flashing	
	Receiver	Battery Fault Indicator-Red	Audible Alarm – On - Chirping
	Valve		Open
Low Battery At Receiver	Sensor		
	Receiver	Battery Fault Indicator – Flashing Red	Audible Alarm – On - Chirping
	Valve		Open (valve will fail safe closed before battery becomes exhausted)
Lost Communication (2 part process; Sensor responds after 15 minutes; Receiver & Valve after 120 minutes of lost communication)	Sensor	Red Flashing (after 15 minutes)	
	Receiver	Status Indicator – Red (after 120 minutes)	Audible Alarm
	Valve		Closed

Receiver - Trouble Shooting Guide

	Light is	System Indication	Valve Position	Resolution
Power Indicator	Green	Receiver is operating on Wall Power	Open	Normal Operating State
	Flashing Green	Receiver is operating on Battery Power	Open	Check for power loss; reattach Power Cord Re-establish power; Press and Release Valve Reset
			Closed- Receiver Battery life is close to exhausted; valve has closed in the fail safe position	If wall power is not available and water flow is desired, switch the Actuator dial to Manual position and push down on the valve actuator handle and manually turn the valve to the open position. (The dial can be found on the back of the actuator, just above the cable assembly.)

Status Indicator	Off	System is NOT in Pairing or Un-Pairing Mode; System is in good communication with sensors; System is not in Manual Override	Open	Normal Operating State
	Flashing Green	Receiver is in Pairing Mode	Open	Pair a Sensor to the Receiver
	Flashing Red	Receiver in in Un-Pairing Mode	Open	Un-Pair a Sensor to the Receiver
	Red	Lost Communication Fault	Open	Receiver is not in communication with one or more sensors
	Flashing Slow Green	System is in Manual Override/System Disabled	Closed	Reset the system to monitoring mode via original source (wall switch or Receiver push button)
Valve State Indicator	Green	System is in normal monitoring mode	Open	Normal Operating State
	Red	Valve has closed for one of the following: Water Fault at Sensor(s) Temperature Fault at Sensor(s) Battery Fault at Receiver	Closed	 -Locate the sensor(s) -Press and Release Reset button at the Sensor -Press and Release Valve Reset at Receiver Restore AC Power to Receiver Press and release Valve Reset at Receiver

		Manual Override at Receiver At Wall Switch		Reset the system to normal monitoring mode via original source (wall switch or Receiver push button)
Water Fault Indicator	Off	Normal	Open	Normal Operation State
	Red	A water fault has been detected at sensor(s)	Closed	-Locate the sensor(s) -Press and Release Reset button at the Sensor -Press and Release Valve Reset at Receiver

Temperature Fault Indicator	Off	Normal	Open	Normal Operation State
	Amber	A low temperature fault has been detected at a sensor(s)	Closed	-Locate the sensor(s) -Press and Release Reset button at the Sensor -Press and Release Valve Reset at Receiver
Battery Fault Indicator	Off	Normal	Open	Normal Operation State
	Red	A low battery fault has been detected at a sensor(s)	Open	-Locate the sensor(s) -Replace the two AA batteries -Press and Release the Reset button at the sensor -Press and Release Valve Reset at Receiver
	Flashing Red	A low battery fault has been detected at the Receiver	Open Closed	Re-establish power; Press and Release Valve Reset If wall power is not available and water flow is desired, switch the actuator dial to Manual position and push down on the valve actuator handle and turn to the open position. (The dial can be found on the back of the Actuator, just above the valve cable assembly.)

Wireless Sensor - Trouble Shooting Guide

Indicator Light	System Indication	Valve Position	Resolution
No lights are on	Normal operation	Open Closed	Normal Operation State Check for Dead Battery at Sensor -Press and release Sensor Interface button – watch for Green or Red Light -Green Light = Good Battery; Paired Sensor -Red Light = Good Battery; UnPaired Sensor -No Light = Dead Battery – replace batteries in Sensor
Red Flashing (6 O'clock position)	Water Fault detected at Sensor	Closed	Remove Sensor from Water, Press and Release Sensor Interface Button to clear fault
Amber Flashing (3 O'clock position)	Temperature below 45° detected at Sensor	Closed	Remove Sensor to a location above 50°, Press and Release the Sensor interface button to clear fault
Red Flashing (3 O'Clock Position)	Low Battery Life detected at Sensor	Open	Replace Sensor Batteries (2) AA Press and Release the Sensor interface button to clear fault *(Note: If Low Battery at Sensor is not corrected in a timely manner and communication with the Receiver is no longer possible, the Fault at the Receiver will display both a Low Battery and a Lost Communication fault).*
Red Flashing (6 O'Clock position)	Lost Communication With Receiver	Open- Sensor is trying to establish communication with the	Press and release the Sensor interface button to enter Range Find Mode –

		receiver. Closed – Communication has been lost for more than 120 minutes.	-No Light = Replace Sensor Batteries -Solid Red Light = No Communication with Receiver -Quick Flashing Green Light = Excellent Communication with Receiver -Slow Flashing Green Light = Good Communication with Receiver -Slow Flashing Red Light = Less than ideal communication with Receiver. 1. Locate and remove wireless signal interference at that location 2. Relocate the Sensor to an area where either Green or Red flashing Light is observed on the Sensor or at original location 3. Wireless Signal Repeater or Sensor Accessory may be necessary - contact installer or Reliance Detection Technologies for additional information. -Press and Release Sensor Interface button to exit Range Find Mode

General System – Trouble Shooting Guide

Issue	Status	Possible Cause	Possible Solution	Suggested Action
Receiver buttons are unresponsive	No lights on the Receiver	No Power	Restore AC Power to the system	Check electrical connections; check breaker
	Status Indicator is Flashing Slow Green -	System is in Manual Override/System Disabled	Return the System to Normal Monitoring Mode	Locate the Remote Manual Wall Switch and turn it to the Off position
Optional Output signal is not working	Accessory or alternate device is not responding to Receiver Fault	Unit is not in full alarm mode (water, temp, lost communication or low battery at Receiver)	The Optional Output Signal is only energized when the unit is in alarm.	Put the system into a water fault state by applying a damp paper towel to the pins on the underside of a sensor.
		Wiring connections may be loose.	Check wiring connections.	
Receiver does not respond to Sensor Fault	Sensor is flashing Fault indicator; receiver is not responding	Sensor has not been paired to the Receiver	Pair the Sensor to the Receiver	
		Sensor is out of range of the Receiver	Confirm range via Sensor Interface button Water Fault: Confirm both pins are simultaneously touching water	

			source	
Sensor does not respond immediately for cold or out of range/communication failure	Ambient temperature at Sensor is < 40° or sensor beyond 150' of the Receiver	The Sensor only reports temperature and confirms range every two hours	Maintain Sensor temperature or location two hours and one minute.	Observe Receiver for correct fault indication after two hours and one minute
	Sensor may not be paired to Receiver	Confirm Pairing to Receiver	Press and release Sensor Interface Button and watch for Light; green = paired, red = not paired	Pair the sensor as may be necessary.

Care and Maintenance:

Annual system check and maintenance is recommended to confirm proper operation of the system.

1. Keep the pins on the underside of the sensors free of any dirt and debris.
2. Keep the area around the sensors free and clear of any objects or materials that may block water reaching the sensor pins in a timely manner.
3. Exercise (press and release) the buttons on the Receiver annually to ensure proper function and that connections are free of corrosion build-up that may inhibit unit performance.
4. If your home is used seasonally or only occasionally as a vacation home, you may want to consider changing out the batteries more frequently in order to ensure system continuity when the structure is unoccupied.
5. This product carries a 3-year manufacturer's warranty. Please consult www.reliancedetection.com website for details.

Customer Support Information:

Reliance Detection Technologies, LLC, 27 Business Park Drive, Branford CT 06405
Phone: 888 771 4929 / 203 488 4477 Fax: 203 481 5036
e-mail: info@reliancedetection.com
www.reliancedetection.com Normal Business Hours: 8:30 am to 5:00 pm (EST) Monday – Friday (Closed for major Holidays)

FCC Compliance Statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interferences will not occur in a particular installation.

Industry Canada Compliance Statement:
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada.

Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.